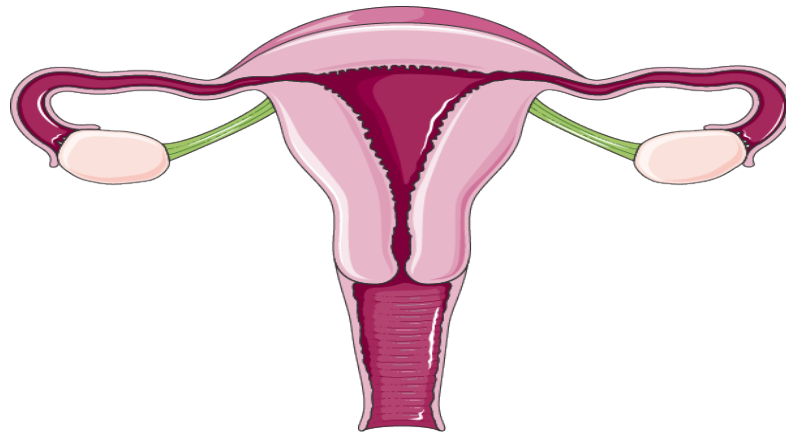




**MEDICINE**  
KING SAUD UNIVERSITY



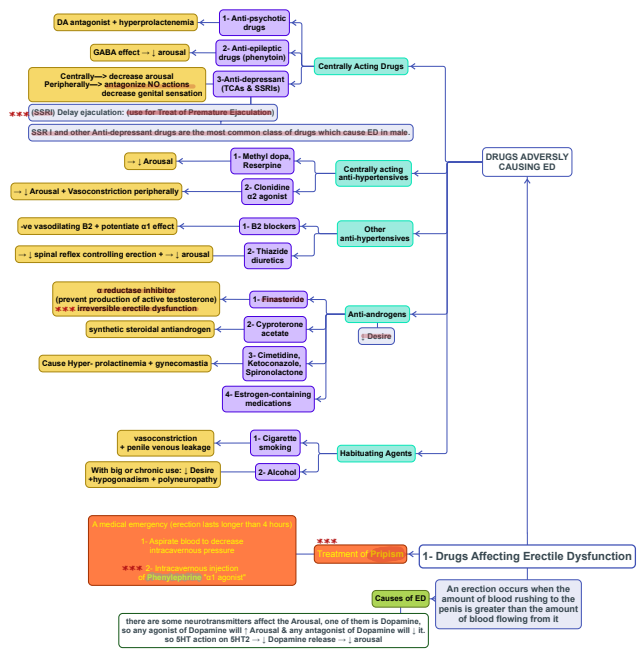
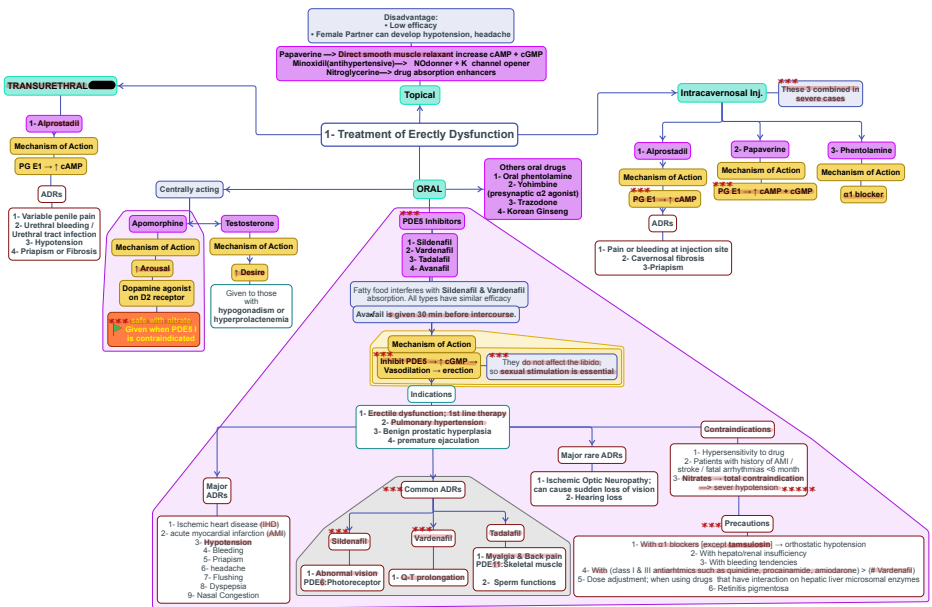
# PHARMACOLOGY

## Review File

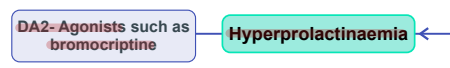
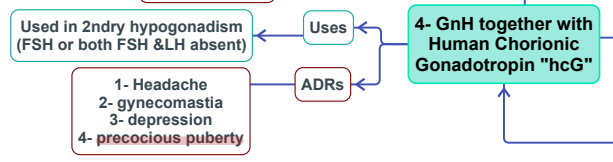
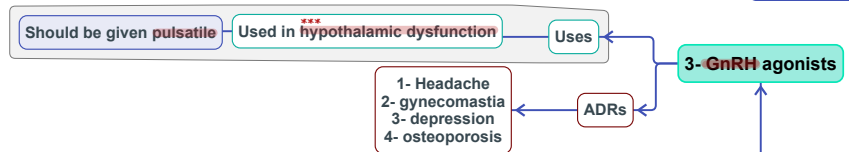
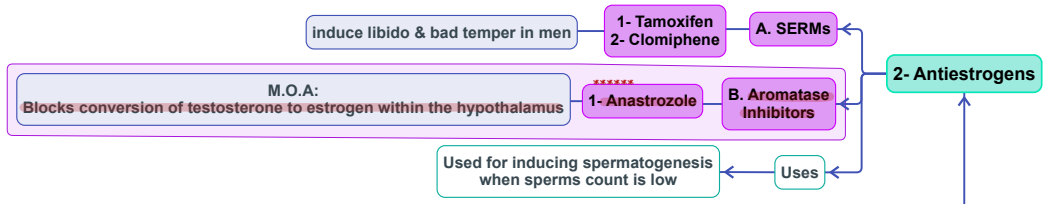
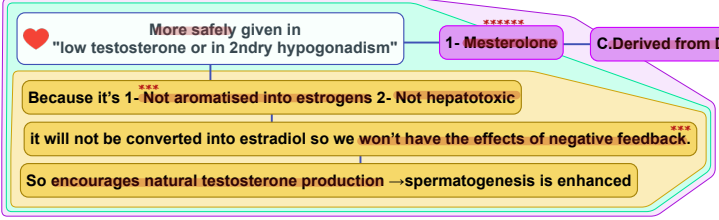
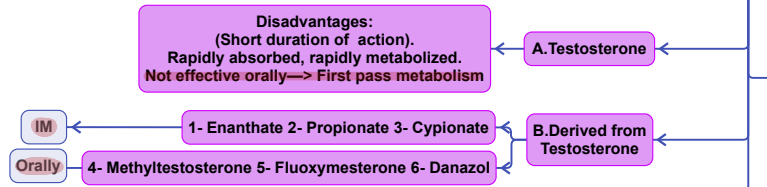
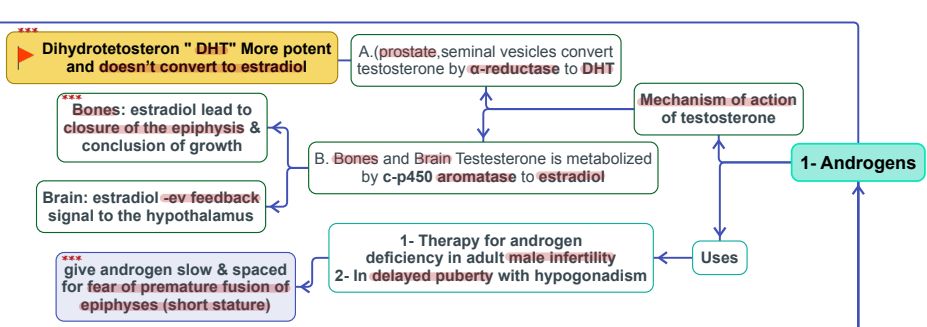
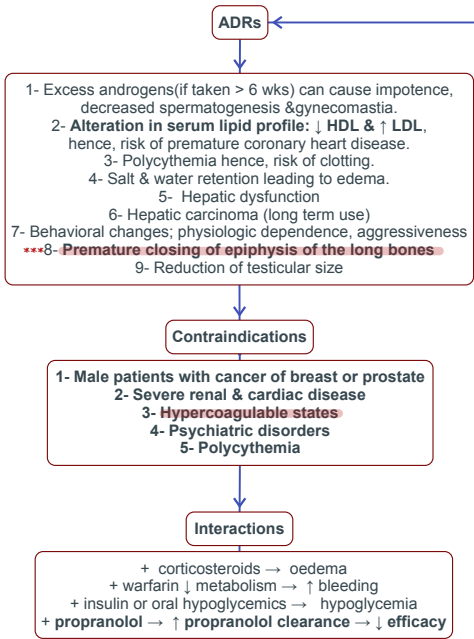
- 1: Drug Affecting Erectile Dysfunction
- 2: Drug Used in Male Infertility
- 3: Teratogens and Drugs of Abuse in Pregnancy
- 4: Drug affecting Uterine Muscle Contractility
- 5: Pharmacology Of Contraception
- 6: Drugs In Ovulation Induction
- 7: Hormonal Replacement Therapy
- 8: Drugs Affecting Breast Milk And Lactation
- 9: Treatment of Sexually Transmitted Disease

Done By :

Hatim Alnaddah, Rawan Saad Alqahtani



<b>Q1: which one of the following drugs need sexual stimulation to be effective in treatment of erectile dysfunction ?</b>		
A : Nitroglycerine.	B : Vardenafil.	C : Papaverine.
<b>Q2: A patient who is taking a PDE-5 inhibitors for ED, is diagnosed with angina. Which of the following antianginal medications would be of particular concern in this patient?</b>		
A : Diltiazem.	B : Amlodipine.	C : Nitroglycerin
<b>Q3: Which of the following is CORRECT regarding finasteride ?</b>		
A : $\alpha$ reductase inhibitor.	B : cause irreversible ED.	C : A&B
<b>Q4: Which one of the following adverse effects/complications explain the highly contraindication to combine quinidine with Vardenafil ?</b>		
A : Anaphylactic reaction due to Hypersensitivity to these drugs.	B : fatal arrhythmias due to prolonged QT interval.	C : Severe hypotension due to potentiated effect.
<b>Q5: Which one of the following adverse effects/complications explain the highly contraindication to combine nitrates with any drug from PDE5 inhibitors class ?</b>		
A : Anaphylactic reaction due to Hypersensitivity to these drugs.	B : fatal arrhythmias due to prolonged QT interval.	C : Severe hypotension due to potentiated effect.
<b>Q6: 44 years old male came to ER with Priapism persist for 6 hours. Which one of the following drugs is highly recommended in his case ?</b>		
A : Apomorphine	B : Phentolamine	C : Phenylephrine
<b>Q7: Which one of the following PDE-5 inhibitors may lead to visual disturbance due to its action on PDE-6 in photoreceptors ?</b>		
A : Sildenafil.	B : Vardenafil.	C : Tadalafil.
<b>Q8: A patient who is taking a PDE-5 inhibitors for ED, later he is diagnosed with angina and be treated with Nitroglycerin. Which of the following medications would be the safest to be used in this patient to treat erectile dysfunction ?</b>		
A : Nitroglycerin.	B : Vardenafil.	C : Apomorphine.
<b>Q9: 39 years old male who has erectile dysfunction, his doctor prescribe to him Viagra. Which of the following is incorrect about Viagra (Sildenafil) ?</b>		
A : They block the conversion of cGMP into GMP.	B : They inhibit PDE-5.	C : They affect libido.
<b>Q10: Which of the following BEST describes the mechanism of action of alprostadil?</b>		
A : Alprostadil blocks cGMP.	B : Alprostadil increases PDE-5.	C : Alprostadil increases cAMP.
<b>Q11: Which one of the following can be used to Treat the Premature Ejaculation in male ?</b>		
A : Phentolamine.	B : fluoxetine.	C : Trazodone.



**2- Drugs used in Male infertility**

**Q1: Which of the following is Derived from Dihydrotestosterone ?**

A : Cypionate	B : Fluoxymesterone	C : Mesterolone
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**Q2: 15 years old teenager has delayed puberty. His doctor decide to prescribe Androgenic drugs. Which one of the following medications will not be of particular concern in this patient especially with his growth\*?**

A : Cypionate	B : Mesterolone.	C : Fluoxymesterone.
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**Q3: Which one of the following is common ADRs effect of methyl-testosterone especially in children of teenagers ?**

A : osteoporosis	B : Muscle atrophy.	C : premature fusion of epiphyses
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**Q4: Which of the following is INCORRECT regarding Mesterolone ?**

A : Exhibit negative feedback of GnHs in pituitary gland.	B : it is not hepatotoxic.	C : Not aromatized into estrogens
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**Q5: 39 years old male who is infertile for 3 years, on physical examination we notice enlargement of his breast. The lab investigation shows high prolactin and low testosterone. Which one of the following drugs would be helpful to treat his infertility ?**

A : metoclopramide.	B : Bromocriptine	C : Tamoxifen
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**Q6: Which of the following BEST describes the mechanism of action of Anastrozole ?**

A : Antagonize the action of estrogen on its receptors in hypothalamus.	B : Inhibit Aromatase enzyme and prevent the conversion of testosterone into estradiol.	C : Increase spermatogenesis by preventing the negative feedback to pituitary gland.
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**Q7: 37 years old male who is infertile due to hypothalamic dysfunction, Which one of the following drugs could be used to treat him ?**

A : GnHs..	B : GnRH	C : Anastrozole
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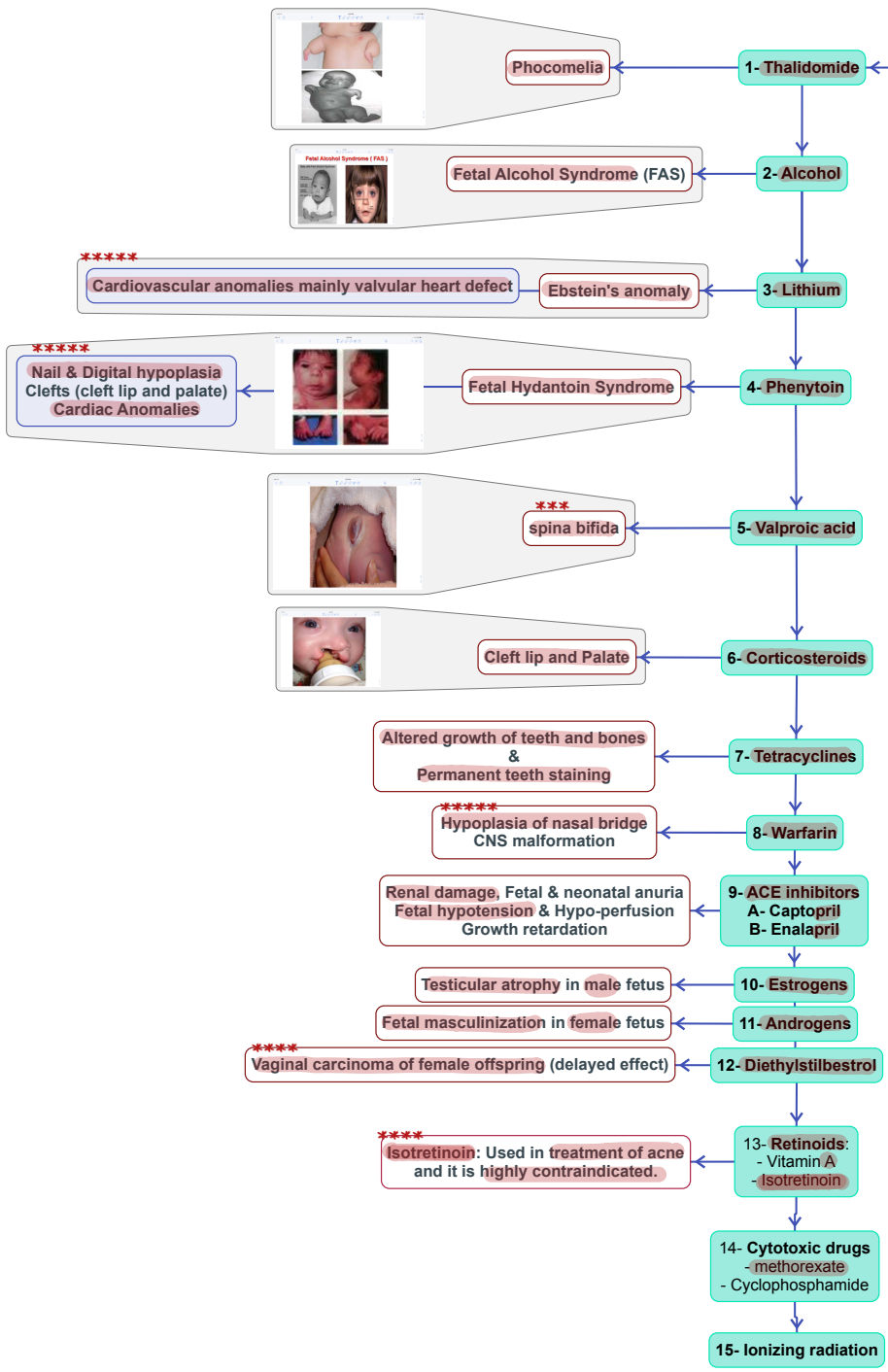
**Q8: Which one of the following enhances spermatogenesis by encouraging the natural testosterone production from the tests ?**

A : Fluoxymesterone.	B : Mesterolone	C : Danazol
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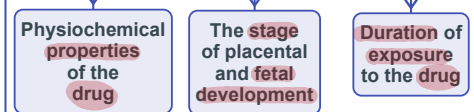
**Q9: Which one of the following can be given Intramuscularly ?**

A : Cypionate	B : Danazol	C : Mesterolone
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1)C. 2)B. 3)C. 4)A. 5)B. 6)B. 7) B. 8)B. 9)A.



**Factors controlling placental drug transfer**



So the drug which given to pregnant should be :

- ✓ Lowest lipid solubility. (So we cannot use Thiopental)
- \*\*\*\*\* ✓ Highest ionization=ionized= polar=water soluble (so we can use succinylcholine, Tubocurarine)
- ✓ Highest molecular weight. (So we can use heparin)
- ✓ Highest protein binding. (So we can use propylthiouracil, chloramphenicol, heparin)
- \*\*\*\*\* ✓ lowest volume of distribution.

**FDA Classification System**

Category	Characteristics	Examples
<b>A</b>	Controlled human studies show no risk	Folic acid Thyroxine
<b>B</b>	Animal studies ok No human data	Paracetamol Erythromycin
<b>C</b>	Animal studies are not ok No human data Risk can not be ruled out	morphine
<b>D</b>	Positive evidence of risk Benefits outweigh risks	Antiepileptics
<b>X</b>	Contraindicated in pregnancy	Thalidomide

Occurrence of congenital defects of the fetus

Teratogens

Impaired teeth & bone development,  
yellow-brown discoloration of teeth

1- Tetracyclines

Drugs

Ototoxicity  
nephrotoxicity

2- Aminoglycosides  
A: Streptomycin,  
B: kanamycin

\*\*\*\*

Gray baby syndrome

3- Cloramphenicol

Adrenal atrophy -  
growth retardation

4- Corticosteroids

Bradycardia & reduced  
uterine blood flow, fetal distress

5- Propranolol

risk of neonatal  
hypothyroidism and goiter

6- Antithyroid drugs  
E.g. Iodide, methimazole,  
carbimazole, propylthiouracil

\*\*\*

Prostaglandin synthesis inhibitors  
increase in gestation time → prolong labor  
pulmonary hypertension in newborns  
Risk of postpartum hemorrhage

7- NSAIDs  
e.g. Aspirin-Indomethacin

Chronic uses: withdrawal symptoms

8- Benzodiazepines  
as Diazepam

Renal damage

9- ACEIs

Risk of bleeding

\*\*\*\*  
10- warfarin

Respiratory depression

11- CNS depressants  
A- diazepam  
B- morphine

\*\*\*

Neonatal hyperbilirubinemia " Jaundice"

12- Sulfonamides

Drugs of choice in pregnancy

<b>Antihypertensive</b>	<b><math>\alpha</math>-methyl dopa</b> <b>Labetalol (<math>\alpha</math> - <math>\beta</math> Blocker)</b> <b>Hydralazine (emergency only)</b>	***
<b>Antibiotics</b>	<b>penicillin, cephalosporins, erythromycin</b>	
<b>Antidiabetics</b>	<b>Insulin, avoids oral antidiabetics</b>	
<b>Anticoagulants</b>	<b>Heparin</b>	***
<b>Analgesics</b>	<b>Acetaminophen</b>	***
<b>Antithyroid drugs</b>	<b>Propylthiouracil (protein-bound)</b>	
<b>Anticonvulsants</b>	<ul style="list-style-type: none"> <li>All antiepileptics have potential to cause malformations</li> <li>avoid valproic acid (highly teratogenic)</li> <li>Folic acid supplementation prevents neural tube defects in women receiving AEDs</li> </ul>	

\*\*\*

-Contraindicated Antibiotics: -  
• Tetracyclines: teeth and bones deformity  
• Quinolones (ciprofloxacin): arthropathy (bone and cartilage damage)  
• Aminoglycosides: ototoxicity  
• Sulfonamides: neonatal jaundice-kernicterus  
• Chloramphenicol: gray baby syndrome

Macrolides (erythromycin and azithromycin):  
as alternative in penicillin-sensitive individuals

It is polar → It does not cross the placenta → The antidote, protamine sulphate is available

Paracetamol

High Binding capacity

Warfarin is contraindicated in all patients because it leads to:  
• Teratogenicity during 1st trimester (hypoplasia of nasal)  
• Risk of bleeding during 2nd and 3rd trimester.



Fetal Alcohol Syndrome ( FAS )

\*\*\*

Characters\* :  
Microcephaly  
Low weight birth  
Craniofacial abnormalities  
(thin upper lips, small eye opening, smooth philtrum)  
CNS & CVS abnormalities

Fetal Alcohol Syndrome (FAS)  
in 1st trimester

Is contraindicated in all trimesters

Alcohol

It decreases blood flow to uterus  
and fetal oxygenation (Hypoxia).

Cocaine

Similar to alcohol action but  
has an effect on  
Placental abruption

Drug abuse

Tobacco

Reduced blood flow to placenta Fetal hypoxia  
Prematurity (Preterm labor) Perinatal mortality  
Low birth weight

Adverse effects of drugs  
During 2nd & 3rd trimesters

**Q1: Which of the following is recommended and safe to be given to pregnant lady with diabetes ?**

A : Pioglitazone.

B : Insulin.

C : Metformin .

**Q2: Lady visit clinic and she is Pregnant. She was on Warfarin for atrial fibrillation. The physician want to switch to safer drug. Which of the following is recommended to be given to her ?**

A : Ibuprofen.

B : Aspirin.

C : Heparin.

**Q3: Which of the following drugs may lead to Cardiovascular anomalies such as valvular heart defect?**

A : Thalidomide.

B : Lithium

C : Warfarin.

**Q4: Which of the following is recommended and safe to be given to pregnant lady with Hypertension?**

A : Captopril + Losartan.

B : Hydrochlorothiazide.

C :  $\alpha$ - methyl dopa.

**Q5: Which of the following is recommended and safe to be given to pregnant lady with Hyperthyroidism ?**

A : Carbimazol.

B : Radioactive Iodine.

C : Propylthiouracil.

**Q6: Pregnant lady came to ER with preeclampsia. She had severe elevated in blood pressure with edema. Which of the following antihypertensive agent is recommended to be used in her case ?**

A. Hydralazine.

B :  $\alpha$ - methyl dopa.

C : Both A & B

**Q7: Which of the following drugs may lead to Nail & Digital hypoplasia, cleft lip and palate and Cardiac Anomalies ?**

A : Phenytoin.

B : Lithium.

C : Warfarin.

**Q8: Newborn baby have small head and special face features such as thin upper lips, small eye opening, smooth philtrum and mental retardation. What most likely cause of this abnormality ?**

A : Clomiphene.

B : Alcohol.

C : Warfarin.

**Q9: Which of the following can easily cross the placenta ?**

A : Lowest ionization/non ionized.

B : Highest molecular weight.

C : Highest protein binding.

**Q10: All of the following is classified under category X EXCEPT :**

A : Thalidomide.

B : Isotretinoin.

C : Azithromycin.

**Q11: Which of the following antibiotic have high risk to induce neonatal hyperbilirubinemia and brain damage (kernicterus) ?**

A : Erythromycin.

B : Chloramphenicol

C : Sulfonamide.

**Q12: Which of the following drugs may lead to Hypoplasia of nasal bridge in baby, if her mother take it during pregnancy ?**

A : Phenytoin.

B : Lithium.

C. Warfarin.



Q13: Which of following may lead to mothers' complain that their newborn tend to be reluctant to to breastfeeding or suckling ?		
A : Lithium.	B : Aspirin.	C : morphine.
Q14: Which of the following pain killers is safe to be used in pregnant women ?		
A : Ibuprofen.	B : Aspirin.	C : Paracetamol.
Q15: Which of following has delayed effect on female baby and may lead to vaginal carcinoma ?		
A : Lithium.	B : morphine.	C : Diethylstilbestrol.
Q16: Newborn baby have small head with Low weight birth , what most likely cause of this abnormality ?		
A : Alcohol.	B : Cocaine & Tobacco.	C : All of them.
Q17: Which of the following Vitamins should be restricted in pregnancy ?		
A. Vit A.	B. Vit C.	C. Vit B.
Q18: Which of the following is incorrect regarding the valproic acid during pregnancy ?		
A. It is under category X, and It Impairs folate absorption.	B. It cause Neural tube defect (spina bifida).	C. It safe to be used in 2nd & 3rd trimesters.

13)C.      14)C.      15)C.      16)C.      17)A.      18)C

- Difference between PGs and Oxytocin:
- PGs contract uterine smooth muscle not only at term (as with oxytocin), but throughout pregnancy.
  - PGs soften the cervix; whereas oxytocin does not.
  - PGs have longer duration of action than oxytocin.

### 4-DRUGS PRODUCING UTERINE CONTRACTIONS (oxytocic)

#### OXYTOCIN

##### 1- Syntocinon

##### Mechanism of action

Stimulates uterine contractility particularly of the fundus (only the fundus not the cervix) resemble the normal physiological contractions of uterus (contractions followed by relaxation)

promotes the influx of  $Ca^{++}$  from extra cellular fluid and from S.R. into the cell, this increase in cytoplasmic calcium, stimulates uterine contraction

##### Clinical Uses

1. Induction & augmentation of labor **the drug of choice**
  - ✓ Post maturity (exceeds the normal duration of pregnancy 'about 40 weeks')
  - ✓ Maternal diabetes
  2. Post partum uterine hemorrhage.
  3. Impaired milk ejection, as nasal spray
- Clinically oxytocin is given only when uterine cervix is soft and dilated

##### Side Effects

1. Maternal death due to hypertension
2. Uterine rupture
3. Fetal death (ischemia)
4. Water intoxication

##### Contraindications

1. Hypersensitivity
2. Prematurity
3. Abnormal fetal position
4. Evidence of fetal distress
5. Cephalopelvic disproportion
6. Incompletely dilated cervix

##### Precautions

1. Multiple pregnancy
2. Previous c-section
3. Hypertension

#### ERGOT ALKALOIDS

- 1- Ergometrine (Ergonovine)
- 2- Methyl ergometrine (methyl ergonovine)

##### Mechanism of action

Induce TETANIC CONTRACTION of uterus without relaxation in between - contractions of uterus as a whole i.e. fundus & cervix

##### Clinical Uses

1. Post partum hemorrhage (3rd stage of labor) **is the drug of choice**

##### Side effects

1. Hypertension
2. Vasoconstriction of peripheral blood
3. Gangrene

##### Contraindications

1. Induction of labour
  - a) 1st and 2nd stage of labor
  2. vascular disease
3. Severe hepatic and renal impairment
4. Severe hypertension

##### Preparation

**Syntometrine** (ergometrine 0.5 mg + oxytocin 5.0 I.U.), Given I.M. When to give it? After birth, 3rd stage of labor

#### PROSTAGLANDINS

- 1- PGE2 ( Dinoprostone )
- 2- PGF2α ( Dinoprost, Carboprost )
- 3- PGE1 (misoprostol)

##### Clinical Uses

1. Induction of abortion (pathological)
2. Induction of labor (fetal death in utero)
3. Postpartum hemorrhage

##### Side Effects

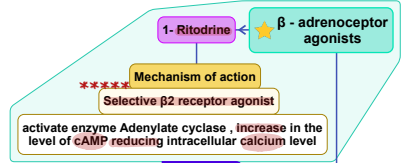
1. Nausea , vomiting , Abdominal pain, Diarrhea
2. Bronchospasm (PGF2α)
3. Flushing (PGE2)

##### Contraindications

1. Mechanical obstruction of delivery
2. Fetal distress
3. Predisposition to uterine rupture

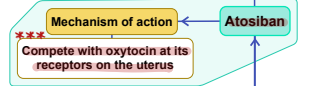
##### Precautions

1. Asthma → PGF2α (Dinoprost)
2. Multiple pregnancy
3. Glaucoma
4. Uterine rupture



##### Side effects

1. Tremor
2. Hypotension
3. Hyperglycemia
4. Hypokalemia



##### Side effects

1. Ankle edema

Action and Uses  
Relax the uterus and **arrest threatened** **abortion** or **delay premature labor**

### 4-DRUGS PRODUCING UTERINE RELAXATION (tocolytic)

**Q1: Syntocinon can be used in which of the following situation ?**

A : To induce labor in uterus of pregnant at term with soft and dilated cervix.

B : To induce milk ejection in breastfeeding women.

C : All of them

**Q2: Which of the following can be used in case of breastfeeding women who cannot nursing her newborn due to impaired milk ejection ?**

A: IV Oxytocin.

B : Nasal spray Syntocinon.

C : Oral Dinoprostone

**Q3: Women finish 42 weeks of pregnancy and does not show any sign of labor. So her doctor decide to induce the labor, which one of the following is drug of choice?**

A : IV Syntocinon.

B : Nasal spray Syntometrine.

C : IM methyl-ergometrine.

**Q4: Which of the following can be used to induce labor especially in diabetic pregnant and her cervix is soft and dilated ?**

A. IV Syntocinon.

B. IM methyl-ergometrine

C. All of them

**Q5: 31 years old women who suffer from Post-partum hemorrhage after she deliver her child. Which one of the following can be used to stop the bleeding in her case ?**

A : A. IV Syntometrine

B. IM methyl-ergometrine

C. All of them

**Q6: A 20 weeks' pregnant lady knows recently that she has teratogenic baby, so she and her husband decide to induce abortion and terminate the pregnancy. Which of the following the doctor can use in her case ?**

A. A. IV Oxytocin.

B. Oral Misoprostol

C. IM methyl-ergometrine

**Q7: Asthmatic pregnant lady want to terminate her 15 weeks pregnancy, which one of the following is highly contraindicated ?**

A. Dinoprostone

B. Misoprostol.

C. Dinoprost.

**Q8:Which of the following can be used to delay premature labor in pregnant lady ?**

A. Dinoprostone.

B. Syntocinon.

C. Ritodrine

**Q9: A 35 weeks' pregnant lady who has unstable pregnancy and has high risk of abortion. Which of the following the doctor can use in her case to arrest threatened abortion ?**

A. Atosiban.

B. Syntocinon.

C. Dinoprostone.

**Q10: Which one of the following act as beta adrenoceptors agonist to relax uterine muscles and delay premature labor ?**

A. Atosiban.

B. Ritodrine.

C :.Nifedipine.

**Q11: Which one of the following act as oxytocin antagonist on its receptors to relax uterus and delay premature labor ?**

A. Atosiban.

B. Ritodrine.

C :.Nifedipine.

**Q12: Which of the following is the drug of choice to induce labor ?**

A. Misoprostol.

B. Syntocinon.

C. Ritodrine

**Q13: Which one of the following act as calcium channel blocker to relax uterine muscles and delay premature labor ?**

A. Atosiban.

B. Syntocinon.

C :.Nifedipine .

1)C. 2)B. 3)A. 4)A. 5)C. 6)B. 7)C. 8)C. 9)A. 10)B. 11)A. 12)B. 13)C.

**PROGESTINS**

**Progestin Related ADRs**

- 1- Menstrual irregularities
- 2- Weight gain
- 3- Hirsutism
- 4- Masculinization (Norethidrone)
- 5- Ectopic pregnancy

- 1- Norethidrone
- 2- Levonorgestrel (Norgestrel)
- 3- Medroxyprogesterone acetate

Has systemic androgenic effect; acne, hirsutism, weight gain

- 1- Norgestimate
- 2- Desogestrel
- 3- Drospirenone

Has no systemic androgenic effect

**ESTROGENS**

**Estrogen Related ADRs**

- 1- ↑ Skin Pigmentation
- 2- Hyperglycemia
- 3- ↑ incidence of breast, vaginal & cervical cancer
- 4- Cardiovascular - major concern
  - a. Thromboembolism
  - b. Hypertension
- 5- ↑ frequency of gall bladder disease

**Contraindications of estrogen containing pills**

- Cancer**: Known or suspected breast cancer, or estrogen-dependent neoplasms
- Heart**: 1- Thrombophlebitis / thromboembolic disorders; 2- CHF or other causes of edema
- Pregnancy**: Known or suspected pregnancy
- Given progestin only pills (mini pills)**: Lactating mothers, Obese Females, Smokers, Diabetes, Females > 35 years

**MECHANISM OF ACTION**

by SUPPRESSING THE RELEASE OF GONADOTROPHINS (FSH & LH)

- 1- inhibit ovulation (the main)
- 2- inhibit implantation
- 3- Increase viscosity of the cervical mucus
- 4- Abnormal transport time through the Fallopian tubes

**1- COMBINED Pills (COC)**

Contain estrogen & progestin

#Pills are better taken same time of day  
 #For 21 days; starting on day 1 / ending at day 28  
 #This is followed by a 7 day pill free period

Methods of administration of monthly pills

#TO IMPROVE COMPLIANCE; a formulation of 28 pills  
 # The first 21 pills are of multiphasic formulation  
 # Followed by the last 7 pills are actually placebo

**Monthly Pills**

Are known as Continuous / Extended cycle  
 Cover 91 days schedule Taken continuously for 84 days, break for 7 days, have period every 3 months

**Seasonal Pills**

**Benefit**

- It lessens menstrual periods to 4 times a year
- useful in those who have:
  - 1- pre-menstrual or menstrual disorders (Can prevent migraine during period)
  - 2- perimenopausal women with vasomotor symptoms (Heavy & painful menstrual cycle)

Higher incidence of breakthrough bleeding & spotting during early use

**Disadvantages**

**MECHANISM OF ACTION**

- Increase cervical mucus, so no sperm penetration & therefore, no fertilization

**2- MINI Pills (POP)**

Contain progestin only

Are alternative when estrogen is contraindicated

**Indications**

Should be taken every day, the same time, all year round  
 Or I.M injection e.g. medroxy progesterone acetate 150 mg every 3 months

- 3- MORNING-AFTER Pills**
- Contraception on instantaneous demand,
- 1) 2ndry to unprotected sexual intercourse
  - 2) leaking condom
  - 3) Missed pills
  - 4) Exposure to teratogen e.g. Live vaccine.
  - 5) Rape.
- Post Coital Contraception (Emergency Contraception)

**1- Mifepristone +- Misoprostol**

- only single dose
- Very effective (100%)
- Timing of 1st dose After intercourse: 0- 120 hrs (within 5 days)

- 2- High-dose only Ethinyl estadiol
- 3- High dose only levonorgestrel
- 4- Ethinyl estadiol + Levonorgestrel

**Oral Contraceptive Pills**

**Interactions of COC**

**Medications that cause contraceptive failure**

- Impairing absorption**: Antibiotics (Ampicillin) that interfere with normal GI flora
- CYT P450 Inducers**: 1- Phenytoin, 2- Phenobarbitone, 3- Rifampin

**Medications that ↑ COC toxicity**

- CYT P450 Inhibitors**: 1- Acetaminophen, 2- Erythromycin

**COC altered in clearance of others**

- 1- WARFARIN, risk of bleeding.
- 2- Cyclosporine,
- 3- Theophylline

**Q1: Which of the following is the most appropriate oral contraceptive for a patient with moderate acne?**

- |                                       |                                     |                                   |
|---------------------------------------|-------------------------------------|-----------------------------------|
| A. Ethinyl estradiol/ levonorgestrel. | B. Ethinyl estradiol/norethindrone. | C. Ethinyl estradiol/norgestimate |
|---------------------------------------|-------------------------------------|-----------------------------------|

**Q2: Which of the following progestin is not preferable to be used in COC due to its systemic androgenic effects?**

- |                 |                   |                  |
|-----------------|-------------------|------------------|
| A. Desogestrel. | B. Norethindrone. | C. Norgestimate. |
|-----------------|-------------------|------------------|

**Q3: 38 years old female who is obese and heavy smoker wants to control her birth. Which type of oral contraceptive would be suitable in her case ?**

- |                              |                             |                          |
|------------------------------|-----------------------------|--------------------------|
| A. Triphasic combined pills. | B. Seasonal combined Pills. | C. progestin only pills. |
|------------------------------|-----------------------------|--------------------------|

**Q4: 29 years old female who has menorrhagia & Dysmenorrhea, Which type of oral contraceptive would be helpful in her case?**

- |                              |                             |                          |
|------------------------------|-----------------------------|--------------------------|
| A. Triphasic combined pills. | B. Seasonal combined Pills. | C. progestin only pills. |
|------------------------------|-----------------------------|--------------------------|

**Q5: Which of the following best describes the main mechanism of mini pills as contraceptive ?**

- |  |   |  |
|--|---|--|
| A. Inhibit ovulation by exhibiting negative feedback on pituitary. | B. Inhibit implantation by decreasing endometrial thickening. | C. Inhibit sperm penetration by increasing cervical mucus. |
|--|---|--|

**Q6: 19-year-old female was raped before four days came to ER, What can be used in her case to prevent her to get pregnant ?**

- |  |                                |                             |
|--|--------------------------------|-----------------------------|
| A. High-dose of combined oral contraceptive. | B. Mifepristone ± Misoprostol. | C. High-dose of mini pills. |
|--|--------------------------------|-----------------------------|

**Q7: Which of the following best describes the main and most important mechanism of Combined oral contraceptive pills?**

- |  |   |  |
|--|---|--|
| A. Inhibit ovulation by exhibiting negative feedback on pituitary. | B. Inhibit implantation by decreasing endometrial thickening. | C. Inhibit sperm penetration by increasing cervical mucus. |
|--|---|--|

**Q8: 32 years old female who gave birth recently. She breastfeeds her child now, and does not want to get pregnant. Which type of oral contraceptive would be suitable in her case and will not affect her milk's volume ?**

- |                              |                             |                          |
|------------------------------|-----------------------------|--------------------------|
| A. Triphasic combined pills. | B. Seasonal combined Pills. | C. Progestin only pills. |
|------------------------------|-----------------------------|--------------------------|

**Q9: A 26-year-old female is using combined oral contraceptive as a method of contraception. Which of the following is the most serious adverse effects is a concern if she wishes to use this therapy long-term?**

- |                       |                       |                              |
|-----------------------|-----------------------|------------------------------|
| A. Breast tenderness. | B. Venous thrombosis. | C. Impair glucose tolerance. |
|-----------------------|-----------------------|------------------------------|

**Q10: 28 years old female who has family history of breast cancer. She is married and does not want to get pregnant. Which type of oral contraceptive would be suitable in her case ?**

- |                              |                             |                          |
|------------------------------|-----------------------------|--------------------------|
| A. Triphasic combined pills. | B. Seasonal combined Pills. | C. Progestin only pills. |
|------------------------------|-----------------------------|--------------------------|

**Q11: 27-year-old female was given live attenuated vaccine, what can be used in her case to prevent her to get pregnant?**

- |                                |   |                             |
|--------------------------------|---|-----------------------------|
| A. Mifepristone ± Misoprostol. | High-dose of combined oral contraceptive. | C. High-dose of mini pills. |
|--------------------------------|---|-----------------------------|

**Q12: 34 years old female who is On phenytoin, she decide to control her birth by taking combined oral contraceptive. What will we expect to happen in her case ?**

- |  |  |                                  |
|--|--|----------------------------------|
| A. Contraceptive thereby failure & she get pregnant. | B. potentate COC toxicity & she develop gall stone | C. Potentate phenytoin toxicity. |
|--|--|----------------------------------|

**Q13: 34 years old female who is on warfarin, she decides to control her birth by taking combined oral contraceptive. What will we expect to happen in her case ?**

- |  |  |  |
|--|--|--|
| A. Contraceptive thereby failure & she get pregnant. | B. potentate COC toxicity & she develop gall stone | C. Potentate Warfarin toxicity & she start bleeding. |
|--|--|--|

1)C. 2)B. 3)C. 4)B. 5)C. 6)B. 7) A. 8)C. 9)B. 10) C. 11)A. 12)A. 13)C.

**\*\*\*\*\*  
5- Metformin For  
POLYCYSTIC OVARIAN  
SYNDROME (PCOS)**

**Drugs Used in Ovulation Induction**

Clomiphene has Success rate for inducing ovulation is 40%

**1- Antiestrogens**

- 1- Clomiphene
- 2- Tamoxifen

Tamoxifen is Non Steroidal

**Mechanism of action**

• Compete with estrogen on the hypothalamus and anterior pituitary gland  
- decrease/inhibits the negative feed back  
\*\*\* of endogenous estrogen

✓ Tamoxifen is a good alternative to clomiphene in women with PCOS and clomiphene-resistant cases

\*\*\* Tamoxifen Used in palliative treatment of estrogen receptor-positive breast cancer.  
✓

**\*\*\*\*\*  
Indication**

Female infertility 2ndry to anovulation or oligoovulation " normogonadotrophic "

**Method of administration**

for 5 days from 5th day of the cycle to the 10th day

**ADRs**

- 1- Hyperstimulation of the ovaries  
\*\*\* & high incidence of multiple birth
- 2- Visual disturbances (reversible)
- 3- Hair loss (reversible)
- 4- Weight gain

Success rate for inducing ovulation is usually >75 %

**2- GnRH- agonists**

- 1- Leuprolin
- 2- Goserelin

**\*\*\*\*\*  
Indication**

Female infertility 2ndry to hypothalamic amenorrhea (GnRH deficient)

**Method of administration**

\*\*\* given S.C. in a pulsatile (drip) Start from day 2-3 of cycle up to day 10

Given continuously, when gonadal suppression is desirable e.g.  
\*\*\*\*\*- precocious puberty  
- advanced breast cancer in women  
- prostatic cancer in men

**ADRs**

- Hypogonadism on long term use
- 1- Hot flashes
  - 2- decrease Libido
  - 3- Osteoporosis

**3- Gonadotrophins**

- 1- Human Menopausal Gonadotrophin ( hMG )
  - 2- Human Chorionic Gonadotrophin (hCG)
- " MENOTROPIN " \*\*\* Contains FSH&LH
- " PREGNYL " \*\*\* Contains LH

**\*\*\*\*\*  
Indication**

Female infertility 2ndry to gonadotropin deficiency (pituitary insufficiency)

**Method of administration**

hMG is given i.m every day starting at day 2-3 of cycle for 10 days followed by hCG on (10th - 12th day) for OVUM RETRIEVAL \*\*\*

**ADRs**

- FSH containing preparations
- 1- Fever
  - 2- Ovarian enlargement
  - 3- Multiple Pregnancy
- LH containing preparations
- 1- Headache
  - 2- edema

**4- D2 R agonists**

- 1- BROMOCREPTINE

**Mechanism of action**

binds to dopamine receptors in the anterior pituitary gland & inhibits prolactin secretion

**\*\*\*\*\*  
Indications**

Female infertility 2ndry to hyperprolactinaemia

**ADRs**

- 1- nausea, vomiting, constipation
- 2- Dry mouth & nasal congestion
- 3- Insomnia

**Q1: 33 years old female who is obese, she was diagnosed with PCOS two years ago. Now, she is trying to have a baby and get pregnant. Which of the following drugs can be helpful in her case to induce ovulation?**

A. Leuprolin.	B. Menotropin & Pregnyl	C. Metformin.
---------------	-------------------------	---------------

**Q2: 26 years old female who has breast cancer. Her lab investigation shows it is a positive for estrogen receptors, which of the following drugs can be used in her case ?**

A. Clomiphene.	B. Menotropin & Pregnyl.	C. Tamoxifen.
----------------	--------------------------	---------------

**Q3: Which of the following can be used to treat infertile women due to hypothalamic amenorrhea or 2ndry to GnRH deficiency?**

A. Pulsatile Leuprolin.	B. Menotropin & Pregnyl.	C. Continuous Goserelin.
-------------------------	--------------------------	--------------------------

**Q4: Which of the following can be used to treat infertile women due to pituitary insufficiency or gonadotrophic deficiency?**

A. Clomiphene.	B. Menotropin & Pregnyl.	C. Pulsatile Leuprolin.
----------------	--------------------------	-------------------------

**Q5: 7 years old girl who has precocious puberty, Which of following would be helpful in her case?**

A. Pulsatile Leuprolin.	B. Menotropin & Pregnyl.	C. Continuous Goserelin.
-------------------------	--------------------------	--------------------------

**Q6: Which of the following can be used to treat infertile women due to primary anovulation and high level of estrogen ?**

A. Clomiphene.	B. Menotropin & Pregnyl.	C. Bromocriptine.
----------------	--------------------------	-------------------

**Q7: In which day of the cycle, hCG should be given for ovum retrieval ?**

A. 5th day.	B. 5th – 10th day.	C. 10th – 12th day
-------------	--------------------	--------------------

**Q8: 31 years old female who is failed to have a baby for three years. Her lab investigation shows high level of prolactin and low level of FSH & LH and estrogen and progesterone in her plasma. Which one of the following drugs can be helpful in her case to induce ovulation ?**

A. Clomiphene.	B. Menotropin & Pregnyl.	C. Bromocriptine.
----------------	--------------------------	-------------------

1)C. 2)C. 3)A. 4)B. 5)C. 6)A. 7) C. 8)C.



# Hormone replacement therapy

## 1- Estrogen

### Administration

Estradiol: Oral bioavailability is low

Oral:  
Conjugated equine  
Estradiol valerate  
Estril succinate

Subcutaneous implant/Transdermal  
estradiol

Vaginal cream

### Types of estrogen receptors "ER"

1- ER  $\alpha$   
mediates female hormonal functions  
'Endometrium, breast, ovaries, hypothalamus'

2- ER  $\beta$   
mediates other hormonal functions  
'brain, bone, heart, lungs, kidney, bladder.'

\*\*\*\*

- Not given unless presence of symptoms;  
- alone only after hysterectomy  
- Can be used with progestin as HRT if she has Uterus  
- (never exceed 5 years administration) to avoid cancer

### Indications

#### A. In Menopause

- 1- Improves hot flushes & night sweats
- 2- Controls sleep disturbance & mood swings
- 3- Improves urethral & urinary symptoms
- 4- Improves vaginal dryness
- 5- Increases bone density
- 6- Protects CVS, in short term
- 7- Improves insulin resistance
- 8- Improves cognitive function
- 9- Delays parkinsonism

#### B. Other Uses

- 1- Contraception
- 2- Primary ovarian failure
- 3- Amenorrhoea & Hirsutism caused by excess androgens

### Drug-drug interaction:

- With (SERM): additive side effects for both drugs
- With Aromatase inhibitors:  $\downarrow$  efficacy
- With Corticosteroids:  $\uparrow$  side effects

Increases bone density by:

Estrogen  $\rightarrow$   $\uparrow$  calcitonin release from thyroid to  $\downarrow$  osteoclastic activity.

Progestins  $\rightarrow$  act synergistic by blocking corticosteroid induced bone resorption.

## 2- Progesterone

- 1- Norethindrone
- 2- Levonorgestrel (Norgestrel)
- 3- Medroxyprogesterone acetate
- 4- Norgestimate
- 5- Desogestrel
- 6- Drospirenone

Have systemic androgenic effect:  
acne, hirsutism, weight gain

\*\*\*\*

Have no systemic androgenic effect

Progestins are synthetic progestogens that have effects similar to progesterone (progestinic effects) but are not degraded by GIT, so we can give it orally

### Indications

#### A. In Menopause

- 1- Protects against possibility of estrogen induced endometrial cancer
- 2- Progesterone (natural) protects against breast cancer

#### B. Other Uses

1. Contraception (Estradiol + Progestins)
2. Dysmenorrhea
3. Menopausal symptoms

As HRT, usually progesterone given in combination with estrogen if uterus is present. \*\*\*\*  
but if there is hysterectomy we use estrogen only. \*\*\*\*  
use it alone in risk of cancer but does not  $\downarrow$  all menopausal symptoms

### ADRs

- 1- Irregular vaginal bleeding
- 2- Breast tenderness
- 3- CVS problems in long term; cause deep venous thrombosis & embolism

### Contraindications

- Undiagnosed vaginal bleeding
- Cancer; endometrial, breast, ovarian
- Severe liver disease
- Thromboembolic manifestations

## 3- Selective ER-Modulators [SERMs]

- A: Raloxifen  
B: Tamoxifen

An ideal SERM for use as HRT should be:  
- Agonist in brain, bone, CVS, vagina & urinary system  
BUT  
- Antagonist in breast & uterus,  
so it will not cause breast or uterine cancer.

\*\*\*\* They are preferable in case of breast/uterine cancer or who has high risk for them

### Raloxifen

-Antagonist in breast and uterus  
-Agonist in bone

\*\*\*\* Has no effect on hot flushes  
\*\*\*\* Has a good effect on bone

### Tamoxifen

-Antagonist in breast  
-Partial agonist in bone & endometrium

\*\*\*\* Increases risk of venous thrombosis  
\*\*\*\* Tends to precipitate vaginal atrophy & hot flushes

## 4- Phytoestrogens

- elements from plants containing isoflavones.  
- Avoid in estrogen dependent breast cancer

\*\*\*\* They block actions mediated by ER  $\alpha$

\*\*\*\* They mimic action of estrogen on ER  $\beta$

## 5- Androgens

\*\*\*\* responsible for sexual arousal given only if there is loss of libido & orgasm

\*\*\*\* if all other menopausal symptom exist  $\rightarrow$  loss of libido, it is given as combinations estrogen + progestin + Androgen.

### A: Tibolone

\*\*\*\* synthetic steroid drug with estrogenic, progestogenic, and weak androgenic actions

## Benefits and Risks of HRT

### Definite benefits

- Alleviates symptoms of menopause (vasomotor, genitourinary)
- Osteoporosis (Definite increase in bone mineral density; probable decrease in risk of fractures)

### Definite risks\*\*\*\*

- Endometrial cancer (estrogen only)
- Venous thromboembolism (long term)
- Breast cancer (long term 5 yrs)

### Uncertain benefits

- Cognitive functions
- Note: the risk of CVS problems and breast cancer with HRT is more than their benefits)

## Non-hormonal agents used in management of menopausal symptoms

- Fluoxetine (SSRI) reduces vasomotor symptoms
- Clonidine (centrally acting antihypertensive, alpha 2 agonist) helps with vasomotor symptoms.
- Gabapentin (anticonvulsant) reduces severity and frequency of hot flushes
- Physical activity: exercise, smoking cessation and relaxation of mind will improve symptoms of menopause (e.g. hot flushes) and fall preventing strategies prevents chances of fracture.

**Q1: Which of the following should be combined with estrogen in hormone replacement thereby to reduce the incidence of endometrium cancer ?**

A. Phytoestrogens.	B. Progestin	C. Tamoxifen.
--------------------	--------------	---------------

**Q2: Which of the following drugs could be safe to be used in case of cardiovascular disorders such as MI?**

A. estrogen	B. Progestin	C. Raloxifene
-------------	--------------	---------------

**Q3: Which of the following has protective effect on bones and reduce the incidence and severity of primary osteoporosis ?**

A. Phytoestrogens.	B. Raloxifene	C. Tamoxifen.
--------------------	---------------	---------------

**Q4: 49 years old female is diagnosed with pelvic inflammatory disease and she has high risk to develop uterine cancer, so her doctor decides to do hysterectomy. Which one of the following drugs can be safe in her case to treat postmenopausal osteoporosis ?**

A. Estrogen	B. Progestin	C. Raloxifene.
-------------	--------------	----------------

**Q5: A 65-year-old female who has been diagnosed with postmenopausal osteoporosis. She has no history fractures and no other pertinent medical conditions such breast or ovary cancer. Which of the following would be most appropriate for management of her osteoporosis?**

A. Tamoxifen.	B. Progestin	C. Raloxifene
---------------	--------------	---------------

**Q6: A 47 years old women who start to develop symptoms such as hot flushes, night sweats, mood Disturbances, vaginal dryness, difficulty in voiding and Loss of Sexual Arousal & Libido. Which of the following would be helpful in her case? \*\***

A. Estradiol+progesterone+Raloxifene	B. Estradiol+progesterone	C. Testosterone+Estradiol+progesterone
--------------------------------------	---------------------------	--

**Q7: A 70-year-old woman is being treated with raloxifene for osteoporosis. Which of the following is a concern with this therapy ?**

A. Breast cancer	B. Hypercholesterolemia.	C. Venous thrombosis.
------------------	--------------------------	-----------------------

1)B. 2)C. 3)B. 4)A. 5)C. 6)C. 7)C.

\*\* Progesterone for à she has uterus, so we need to combine it with estrogen due to its protective effect.

Estrogen for à Hot flushes, night sweats and other symptoms.

Androgens & testosterone for à loss of libido and sexual arousal.

- Tibolone, is a synthetic steroid drug with estrogenic, progestogenic, and weak androgenic actions

**Neonatal hyperbilirubinemia** in babies due to :  
 - Breastfeeding mother who is taking a drug with high binding capacity to albumin.  
 - Breastfeeding mother who is taking oxidized agent and have babies with G6PD such as ..  
 1) Primaquine as anti-malaria agent.  
 2) sulfonamides & trimethoprim = Co-trimoxazole as anti-bacterial agent.  
 \*\*\*\*\*

**Drugs that can augment lactation**

- Dopamine antagonists they stimulate prolactin secretion**
1. Metoclopramide (antiemetic)
  2. Domperidone (antiemetic)
  3. Haloperidol (antipsychotic)
  4. Methyl dopa (antihypertensive drug)
  5. Theophylline (used in asthma)

**Drugs that can suppress lactation**

- These drugs reduce prolactin**
1. Levodopa (dopamine precursor)
  2. Bromocriptine (dopamine agonist)
  3. Estrogen
  4. Androgens
  5. Thiazide diuretics

**Pharmacokinetics changes in pediatrics**

- Higher gastric pH
- Higher concentration of free drug (new born has ↓serum albumin)
- Higher percentage of body water and lower adipose tissues.
- Lower rate of liver metabolism
- Renal clearance is less efficient

**Drugs contraindicated during lactation**

1. Anticancer drugs: (cytotoxicity & neutropenia) e.g Doxorubicin, cyclophosphamide, methotrexate
2. Radiopharmaceuticals: e.g. radioactive iodine
3. CNS acting drugs amphetamine, heroin, cocaine
4. Immunosuppressants: e.g. cyclosporine
5. Alcohol & Lithium (high milk to plasma ratio)
6. Chloramphenicol (bone marrow suppression)
7. Potassium iodide (thyroid effect)
8. Ergotamine
9. Atenolol \*\*\*\*\*
10. Tobacco Smoke

**Summary for choice of drug**

- Drugs known to have serious toxic effects in adults are avoided
- Route of administration (topical, local, inhalation) instead of an oral form.
- Short acting
- Highly protein bound
- Low lipid solubility
- High molecular weight
- Poor oral bioavailability
- No active metabolites
- well-studied in infants

Oxazepam (short t1/2) vs diazepam (long t1/2)

• such as Warfarin.

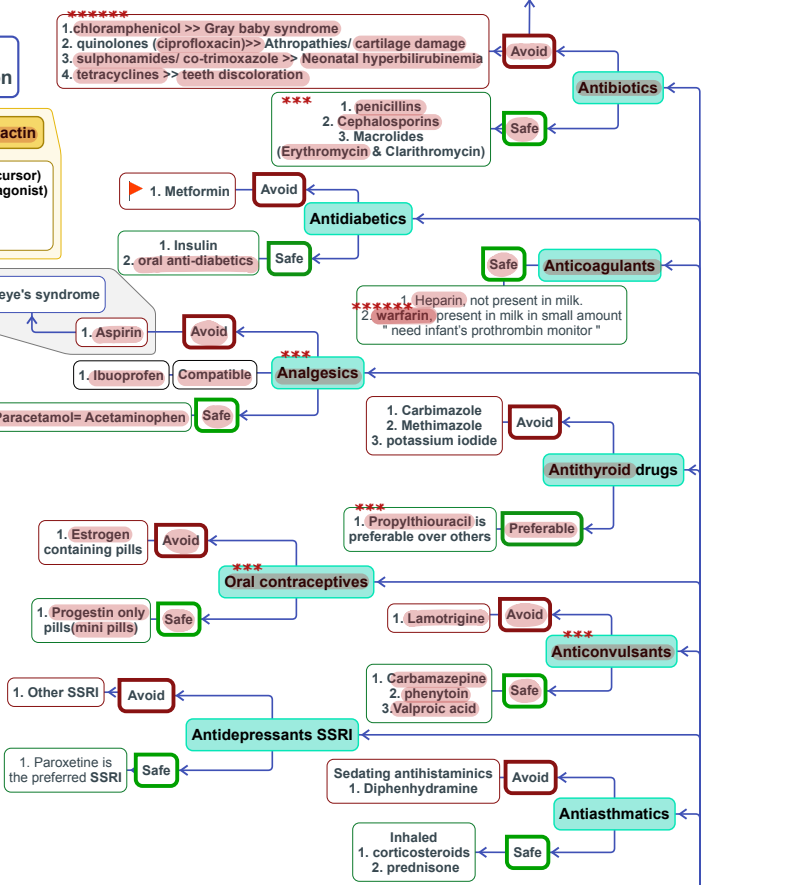
• High MW: Insulin & Heparin.  
 • Low MW: alcohol

• Ionized drug: Heparin. \*\*\*\*\*  
 • High degree of ionization (ionized form=polar=water soluble)

\*\*\*\*\*  
 • Drugs with large volume of distribution (Vd).  
 \*\*\*\*\*

\*\*\*\*\*  
 • Weak Acidic drugs is preferred.  
 So Weak acidic is better than weak basic during breast feeding.

\*\*\*\*\*  
 • Acidic drugs: Nonionized acidic drug will diffuse back and does not secrete in milk.  
 • Basic drugs: Ionized alkaline drug will be captured and secreted in milk.



**8 Drugs of choice in lactation**

**Q1: Which of the following drug's characteristics will lead to appearance of a drug in the milk of breastfeeding mother ?**

A : Acidic drug.

B : Highly ionized drug.

C : Alkaline drug.

**Q2: Which of the following drug's characteristics will be considered when we look for the safest drug for breastfeeding mother?**

A : Acidic drug.

B : Drug with Low distributed volume

C : Alkaline drug.

**Q3: Breastfeeding mother has baby with G6PD deficiency. The mother gets UTI and took antibiotic for that. Two days later, her baby develops jaundice. What drug most likely was taken by the mother to cause this complication in the child?**

A: Ciprofloxacin.

B : Co-trimixazole.

C : Chloramphenicol

**Q4: Which of the following antibiotic can cause grey baby syndrome?**

A : Ciprofloxacin

B : Co-trimixazole.

C : Chloramphenicol

**Q5: Which of the following is considered as compatible/safe drug with breastfeeding mother ?**

A : Lamotrigine

B : Phenobarbitone

C : Warfarin

**Q6: Which one of the following drugs should be avoided in breastfeeding mother?**

A : Warfarin

B : Lithium

C : Acetaminophen

**Q7: Which one of the following drugs could be harmful to the baby during breastfeeding in chronic basis ?**

A : Phenobarbitone

B : mini-pills

C : Valproic acid

**Q8: Which of the following beta blockers is highly contraindicated in lactating women?**

A :Propranolol

B : Timolol

C : Atenolol

**Q9: Which of the following can reduce the volume of milk in lactating mother?**

A : Metoclopramide

B : Haloperidol

C : Estrogen

**Q10: Which of the following drugs can augment lactation in breast feeding mother ?**

A : Hydrochlorothiazide

B : Levodopa

C : Methyl dopa

**Q11: Which of the following can suppress lactation in breastfeeding mother ?**

A : Theophylline

B : Bromocriptine

C : Domperidone

**Q12: Which of the following drugs can augment lactation in breast feeding mother ?**

A : Bromocriptine

B : Metoclopramide

C : Testosterone

**Q13: Which of the following can suppress lactation in breastfeeding mother ?**

A : Phenothiazine

B : Levodopa

C : Methyl dopa

**Q14: Which of the following may lead to hyperbilirubinemia in babies ?**

A : Breastfeeding mother with malaria who is taking **Primaquine** as anti-malaria agent.

B: Breastfeeding mother with UTI who is taking **sulfonamides** as anti-bacterial agent.

C :Both A & B

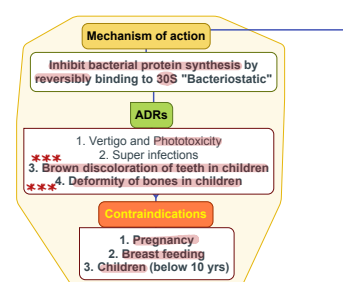
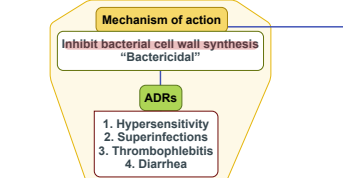
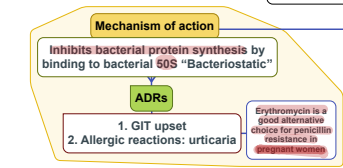
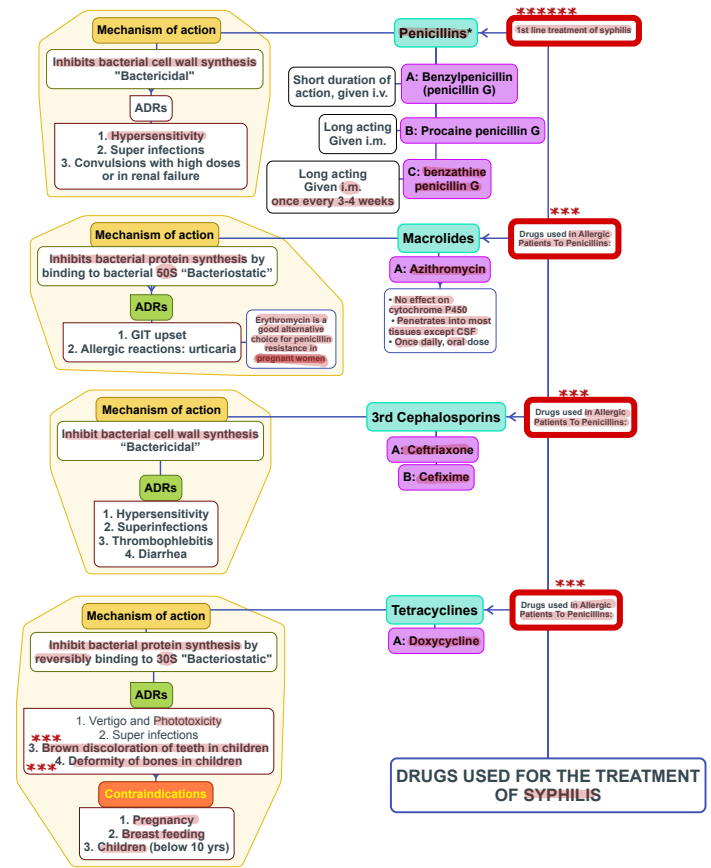
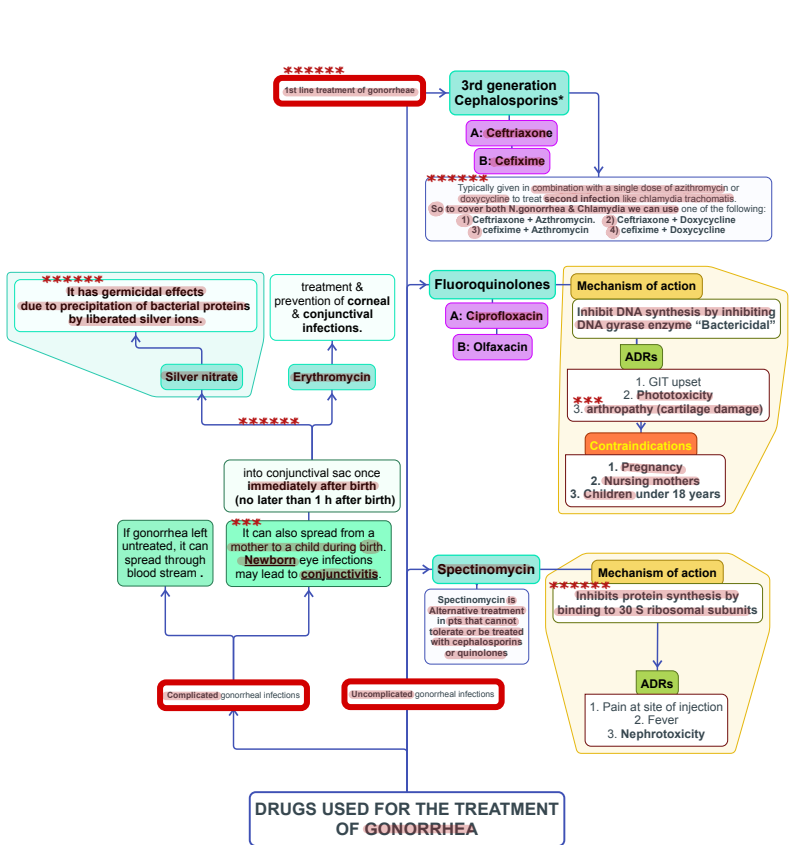
**Q15: Which of the following is the proper time for breastfeeding mother to take medication?**

A : 1 hour before nursing her child.

B : At the same time of nursing her child.

C : Just After nursing her child

1)C. 2)A. 3)B. 4)C. 5)C. 6)B. 7)A. 8)C. 9)C. 10)C. 11)B. 12) B. 13)B. 14)C. 15)C.



**Q1: Which one of the following is the drug of choice for treatment of syphilis?**

A. Ceftriaxone

B. Benzathine penicillin G.

C. Silver nitrate.

**Q2: Which one of the following is the drug of choice for treatment of gonorrhea?**

A. Ceftriaxone

B. Benzathine penicillin G.

C. Silver nitrate.

**Q3: Which ONE of the following is used in syphilis patient who is allergic to penicillin?**

A. Benzathine penicillin G.

B. Ciprofloxacin.

C. Doxycycline.

**Q4: Which of the following may cause bone deformity as adverse effect ?**

A. Amoxicillin

B. Ciprofloxacin.

C. Doxycycline.

**Q5: Which of the following may lead to cartilage damage and arthropathy as adverse effect ?**

A. Amoxicillin

B. Ciprofloxacin.

C. Doxycycline.

**Q6: Which ONE of the following is the mechanism of action of silver nitrate?**

A. Bactericidal Inhibiting bacterial DNA synthesis

B. Bacteriostatic by Inhibiting bacterial protein synthesis.

C. Germicidal by Precipitating of bacterial proteins.

**Q7: Which one of the following is the mechanism of action of Spectinomycin?**

A. Bactericidal Inhibiting bacterial DNA synthesis.

B. Bacteriostatic by Inhibiting bacterial protein synthesis.

C. Germicidal by Precipitating of bacterial proteins.

**Q8: 28 years old lady has gonorrhea. She gave a birth of her first baby through vaginal delivery. Her baby was born with conjunctivitis. Which one of the following drugs is suitable to be used for the baby ?**

A. Silver nitrate.

B. Erythromycin.

C. All of them.

**Q9: A 26 years old man present with burning micturition and discharge. He was diagnosed with gonococcal urethritis. The lab investigation has revealed there is also other organism which is chlamydia trachomatis. Which one of the following combination of antibiotics is appropriate in his case ?**

A. Ceftriaxone + Ciprofloxacin.

B. Ceftriaxone + azithromycin.

C. Ceftriaxone + Silver nitrate.

D. Ceftriaxone + doxycycline

E. Both A & B.

F. Both B & D

1)B. 2)A. 3)C. 4)C. 5)B. 6)C. 7)B. 8)C. 9)F.